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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/766,288

01/26/2004

Brian F. Conaghan

9149/2/1

9349

27614 7590 11/15/2007  
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EXAMINER

VIJAYAKUMAR, KALLAMBELLA M

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

11/15/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

**Application No.**

10/766,288

**Applicant(s)**

CONAGHAN ET AL.

**Examiner**

Kallambella Vijayakumar

**Art Unit**

1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 August 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 49-70 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 61-70 is/are allowed.
- 6) ☒ Claim(s) 49-60 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### DETAILED ACTION

- Claims 49-70 are currently pending with the application as amended. Claims 49-54, 58, 61-62 were amended. Claims 63-70 were newly added.
- The indicated allowability of claims 54-57 are withdrawn over the newly found reference to WO 2001/87503 and US 2003/0211246.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

1. Claims 49-60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kydd et al (WO 200187503) in view of Kydd et al (WO 98/37133 or US 6,379,745)

The US 2003/0211246 is being used as the equivalent of WO Publication in the present rejection. Kydd et al teach a method of making conductive metal patterns over polymer substrates by printing a metal composition over the substrate and curing the composition below about 500C. The metal composition comprised of metal particles and reactive organic medium wherein reactive organic medium comprised of decomposable compound or one or more reagents which form decomposable compound with said metal particles <cure temp lowering agent>. The metal particles comprised of metal flakes, metal spheres, metal colloids and mixtures thereof. The metal particles included silver (Claims 1 and 7-11). The metal colloids comprised of nanoparticles (Example-2, P-0028).

The prior art is silent about the coating over the nanoparticles with an organic and fails to teach the instant claimed temperature and time per claim-54.

The surface coating of the colloidal metal particles with organic surfactants would be obvious over stabilizing their dispersion and keep the particles from aggregation that is well known in the art as taught by Kydd et al (WO 98/37133 or US 6,379,745, Cl-9, Ln 32-39). With regard to the temperature, the instant claimed temperature of less than 200 C lies inside below 500C of prior art (Claim-1), and In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). With regard to the time of less than 30 mins, the prior art teaches heating the samples for 5.7 mins, and Generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

With regard to claims 49 and 55, the prior art teaches silver.

With regard to 50, the prior art teaches mixing the components in a roll mill (P-0029).

With regard claim 51, the ratio of nanoparticles added in examples 1-3 (P-0027-0029) would overlap over the instant claimed range of 10-80 wt%, and the presence of any amount any particles (flake, sphere, nano/colloidal) per the disclosure would meet the various metallic components in the composition.

With regard to the ratios in claims 52, the ratio of addition of neodecanoic acid or organometallic salts <temp. lowering agent> in examples 1-3 (P-0027-0029) lies close to the instant claimed range of 8% by wt and a prima facie case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985) (Court held as proper a rejection of a claim directed to an alloy of "having 0.8% nickel, 0.3% molybdenum, up to 0.1% iron, balance titanium" as obvious over a reference disclosing alloys of 0.75% nickel, 0.25% molybdenum, balance titanium and 0.94% nickel, 0.31% molybdenum, balance titanium.).

With regard to claim 53, the prior art is silent about the particle size of nano particles, and it would have been obvious to a person of ordinary skilled in the art to use metal nanoparticles with a particle size of less than 100 nm dia in the ink composition of Kydd (WO-503) over the teachings of Kydd et al (WO 98/37133 or US 6,379,745, Cl-5, Ln 66 to Cl-6, Ln-2) because the teachings are in the analogous art of making solid metallic conductors over polymeric substrates and having similar compositions.

With regard claim 56, the ratio of metal particles/flakes added in examples 1-3 (P-0027-0029) would overlap over the instant claimed range of 10-60 wt%, and the presence of any amount any particles (flake, sphere, nano/colloidal) per the disclosure would meet the various metallic components in the composition.

With regard to claim 57, the prior art is silent about the particle size of particles/flakes, and it would have been obvious to a person of ordinary skilled in the art to use metal particles/flakes with a particle size of ~5 micron in the ink composition of Kydd (WO-503) over the teachings of Kydd et al (WO 98/37133 or US 6,379,745, Cl-5, Ln 62-66) because the teachings are in the analogous art of making solid metallic conductors over polymeric substrates and having similar compositions.

With regard to claims 58-59, the prior art teaches coating/printing by screen printing (P-0031, Claim-7).

With regard to claim 60, Generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

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#### ***Allowable Subject Matter***

Claims 61-70 are allowed.

The prior art of record neither teaches nor fairly suggest a method of making solid metal conductor over a substrate by a combination of the applicants method steps and the material components processed therein.

#### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kallambella Vijayakumar whose telephone number is 571-272-1324. The examiner can normally be reached on 6.30-4.00 Mon-Thu, 6.30-2.00 Alt Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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/KMV/  
November 11, 2007.

  
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